

Pre-Algebra In-Class Review Assignment (Out of 35)

Name: _____

Period: _____

Due Date: Oct. 14

Modelling Polynomials (Value 8)

1. $-2b^2 - b + 10$

Name the coefficients _____, variable _____, degree _____, and constant term _____ of the polynomial.

2. Identify each polynomial as a monomial, binomial, or trinomial.

a) $19t$

b) $g - 4g^2 + 5$

c) $-1 + xy + y^2$

d) $4 - 11w$

3. Use algebra tiles to model each polynomial. Sketch the tiles.

a) $-5 + y^2$

b) $-3a^2 - 2a + 1$

Pre-Algebra In-Class Review Assignment (Out of 35)

Name: _____

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Modelling Polynomials (Value 8)

1. $-2b^2 - b + 10$

Name the coefficients -2, -1, variable b, degree 2, and constant term 10 of the polynomial.

2. Identify each polynomial as a monomial, binomial, or trinomial.

a) $19t$

b) $g - 4g^2 + 5$

c) $-1 + xy + y^2$

d) $4 - 11w$

3. Use algebra tiles to model each polynomial. Sketch the tiles.

a) $-5 + y^2$

b) $-3a^2 - 2a + 1$

-2

4

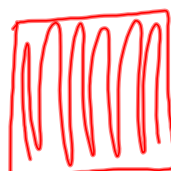
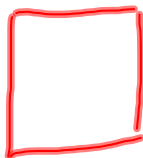
M

T

T

B

-2



Like Terms and Unlike Terms (Value 4)

4. Combine like terms.

a) $4 + x + 1 + 5x + 1 =$

b) $2x^2 + 8 - 11 - 4x^2 + 5x^2 =$

5. Write a polynomial to represent the perimeter of each rectangle.



Adding and Subtracting Polynomials (Value 4)

6. Add these polynomials. Use algebra tiles if it helps.

a) $(x - 5) + (2x + 2)$

b) $(y^2 + 6y) + (-7y^2 + 2y)$

7. Subtract.

a) $(mn - 5m - 7) - (-6n + 2m + 1)$

b) $(2a + 3b - 3a^2 + b^2) - (-a^2 + 8b^2 + 3a - b)$

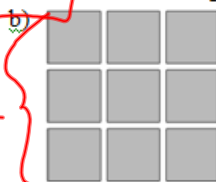
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Multiplying and Dividing a Polynomial by a Constant or Monomial (Value 19)

8. Multiply.

a) $2(3b)$

b) $-2(6h)$

c) $-2(-y^2)$

d) $4(3a + 2)$

e) $(d^2 + 2d)(-3)$

f) $-3(-5m^2 + 6m + 7)$

g) $v(3v + 1)$

h) $(-m)(7k - 3)$

i) $(-r)(-1 - 10r)$

9. Divide.

a) $12d \div 4$

b) $-20d \div 5$

c) $-10q \div -5$

d) $(16v + 16) \div (8)$

e) $(25k^2 - 15k) \div (5)$

f) $(6x + 3) \div 3$

g) $(14w - 7) \div -7$

h) $(9xy - 6x) \div -3x$

10. Write the multiplication sentence modelled by each set of algebra tiles.

a)



b)



Multiplying and Dividing a Polynomial by a Constant or Monomial (Value 19)

8. Multiply.

a) $2(3b)$ $6b$

b) $-2(6h)$ $-12h$

c) $-2(-y^2)$ $2y^2$

d) $4(3a + 2)$ $12a + 8$

e) $(d^2 + 2d)(-3)$ $-3d^2 - 6d$

f) $-3(-5m^2 + 6m + 7)$ $15m^2 - 18m - 21$

g) $v(3v + 1)$ $3v^2 + v$

h) $(-m)(7k - 3)$ $-7km + 3m$

i) $(-r)(-1 - 10r)$ $r + 10r^2$

9. Divide.

a) $12d \div 4$ $3d$

b) $-20d \div 5$ $-4d$

c) $-10q \div -5$ $2q$

d) $(16v + 16) \div (8)$ $2v + 2$

e) $(25k^2 - 15k) \div (5)$ $5k^2 - 3k$

f) $(6x + 3) \div 3$ $2x + 1$

g) $(14w - 7) \div -7$ $-2w + 1$

h) $(9xy - 6x) \div -3x$ $-3y + 2$

10. Write the multiplication sentence modelled by each set of algebra tiles.

a)



b)



$$2x(2x) = 4x^2$$

$$x(2x + 3) = 2x^2 + 3x$$

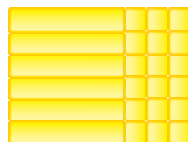
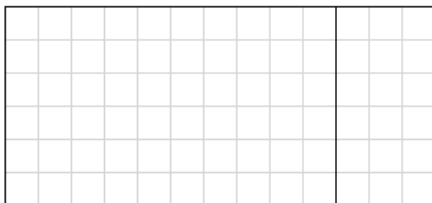
3.3 Common Factors of a Polynomial

LESSON FOCUS

Model and record factoring a polynomial.

Make Connections

Diagrams and models can be used to represent products.



What multiplication sentences are represented above?

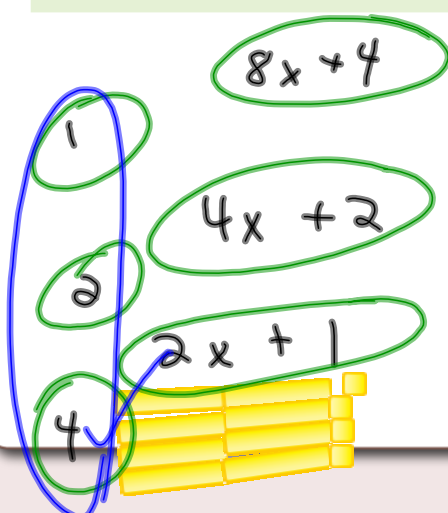
What property do the diagrams illustrate?

THINK ABOUT IT

You may need algebra tiles.

Sketch all the ways you can arrange these tiles to form a rectangle.

Beside each sketch, write the multiplication sentence it represents.

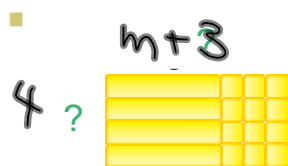
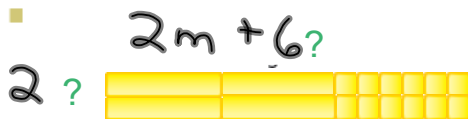
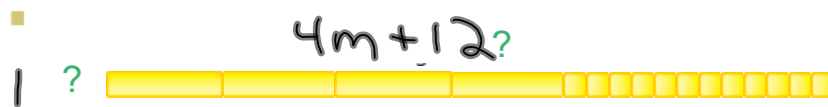


factors
of
 $8x + 4$

3.3 Common Factors of a Polynomial

Each set of tiles below represents the polynomial $4m + 12$.

The dimensions of each rectangle represent the factors of the polynomial.



?

3.3 Common Factors of a Polynomial

The factors of the polynomial $4m + 12$ are:

- $1(4m + 12)$
- $2(2m + 6)$
- $4(m + 3)$

Each pair can be multiplied to make $4m + 12$.

All are factors, however the first two are considered incomplete.

$(4m + 12)$ and $(2m + 6)$ can still be factored further

The third one is complete because $(m + 3)$ cannot be factored any further. Therefore, the greatest common factor of $4m$ and 12 is 4. You could also say that the largest number to divide evenly into $4m$ and 12 is 4 .

Expanding: $3(2 - 5a) = 6 - 15a$



Factoring and expanding are inverse processes.

Factoring: $6 - 15a = 3(2 - 5a)$

Example 1 Using Algebra Tiles to Factor Binomials

Factor each binomial.

a) $6n + 9$

b) $6c + 4c^2$

Ask yourself what is the largest number that can divide evenly in $6n$ and 9

$$= 3(2n + 3)$$

$$= 2c(3 + 2c)$$

 **SOLUTION**

$$2x^3y^2 + 10x^2y^5$$

$$= 2x^2y^2(1x + 5y^3)$$

← ?
CHECK YOUR UNDERSTANDING



Monday, Oct.17

- Review common factoring
- Notes/Examples
- Practice Questions

Please note, that I am in the process of tabulating an overall mark for you and that this mark will be e-mailed home to your parent/guardian on Friday.

What is the greatest common factor of $9a$ and $15a^2$?

Factor $9a - 15a^2$

Example 2 Factoring Trinomials

Factor the trinomial $5 - 10z - 5z^2$.

Verify that the factors are correct.

Ask yourself what is the largest number that can divide into 5, $-10z$, and $-5z^2$

 **SOLUTION**



CHECK YOUR UNDERSTANDING



3.3 Common Factors of a Polynomial

Example 3 Factoring Polynomials in More than One Variable

Factor the trinomial. Verify that the factors are correct.

$$-12x^3y - 20xy^2 - 16x^2y^2$$

Ask yourself what is the biggest term that can divide evenly into $-12x^3y$, $-20xy^2$, and $-16x^2y^2$



 **SOLUTION**



CHECK YOUR UNDERSTANDING

3.3 Common Factors of a Polynomial

What is the greatest common factor of each pair?

Factor the following:

Class work / Homework

Page 155 # 4, 5 (identify the gcf),
7ace, 8ace, 9ace, 10ace,
11, 14, 16

Tuesday, Oct.18

- Pass back Unit Tests
- Pass out mini-reports
- Check and go over yesterday's homework
- Practice Multiplying Binomials
- Class work/ Homework

****bonus assignments due tomorrow.....**

Please note, your mark will be e-mailed home to your parent/guardian this Friday.

How your mark is weighted:

- Exam 30%
-
- Test/Quizzes 30%
-
- Projects/Assignments 25%
-
- Homework/Warm-ups 15%

Right now, each of these categories are weighted more.

$$\underline{87} \times 0.70 = \underline{60}$$

Class work / Homework

Page 155

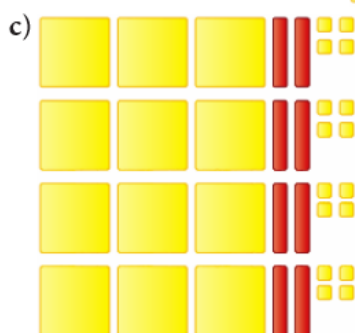
4, 5 (identify the gcf),
7ace, 8ace, 9ace, 10ace,
11, 14, 16

4. For each arrangement of algebra tiles, write the polynomial they represent and identify its factors.



$$4x^2 + 10x$$

$$(2x)(2x + 5)$$



5. Factor the terms in each set, then identify the greatest common factor.

a) $6, 15n$
 3

b) $4m, m^2$
 m

7. Use algebra tiles to factor each binomial.

Sketch the tiles you used.

a) $5y + 10$

b) $6 + 12x^2$

c) $9k + 6$

d) $4s^2 + 14s$

e) $y + y^2$

f) $3h + 7h^2$

Ⓐ $5y + 10$
 $5(y + 2)$

Ⓕ $3h + 7h^2$
 $h(3 + 7h)$

8. Factor each binomial. Why can you not use algebra tiles? Check by expanding.

Ⓐ $9b^2 - 12b^3$

b) $48s^3 - 12$

c) $-a^2 - a^3$

d) $3x^2 + 6x^4$

e) $8y^3 - 12y$

f) $-7d - 14d^4$

a) $9b^2 - 12b^3$
 $3b^2(3 - 4b)$

c) $-a^2 - a^3$
 $-a^2(1 + a)$
 $-a^2(1 + a)$

9. Use algebra tiles to factor each trinomial.

Sketch the tiles you used.

a) $3x^2 + 12x - 6$

b) $4 - 6y - 8y^2$

Ⓒ $-7m - 7m^2 - 14$

d) $10n - 6 - 12n^2$

e) $8 + 10x + 6x^2$

f) $-9 + 12b + 6b^2$

10. Factor each trinomial. Why can you not use algebra tiles? Check by expanding.

a) $5 + 15m^2 - 10m^3$

b) $27n + 36 - 18n^3$

c) $6v^4 + 7v - 8v^3$

d) $-3c^2 - 13c^4 - 12c^3$

Ⓔ $24x + 30x^2 - 12x^4$

f) $s^4 + s^2 - 4s$

$\rightarrow 24x + 30x^2 - 12x^4$
 $6x(4 + 5x - 2x^3)$

c) $6v^4 + 7v - 8v^3$
 $v(6v^3 + 7 - 8v^2)$

9. Use algebra tiles to factor each trinomial.

Sketch the tiles you used.

- a) $3x^2 + 12x - 6$ b) $4 - 6y - 8y^2$
 c) $-7m - 7m^2 - 14$ d) $10n - 6 - 12n^2$
 e) $8 + 10x + 6x^2$ f) $-9 + 12b + 6b^2$

$$\textcircled{c} -7m - 7m^2 - 14$$

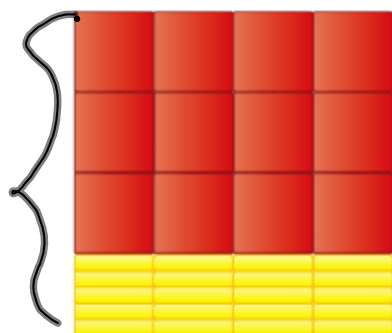
$$-7(m + m^2 + 2)$$

10. Factor each trinomial. Why can you not use algebra tiles? Check by expanding.

- a) $5 + 15m^2 - 10m^3$ b) $27n + 36 - 18n^3$
 c) $6v^4 + 7v - 8v^3$ d) $-3c^2 - 13c^4 - 12c^3$
 e) $24x + 30x^2 - 12x^4$ f) $s^4 + s^2 - 4s$

$$6x(4 + 5x - 2x^3)$$

11. a) Write the polynomial these algebra tiles represent.



- b) Factor the polynomial.
 c) Compare the factors with the dimensions of the rectangle. What do you notice?

14. Simplify each expression by combining like terms, then factor.

a) $x^2 + 6x - 7 - x^2 - 2x + 3$

$4x - 4 = 4(x - 1)$

b) $12m^2 - 24m - 3 + 4m^2 - 13$

c) $-7n^3 - 5n^2 + 2n - n^2 - n^3 - 12n$

$$\frac{-8n^3 - 6n^2 - 10n}{-2n} (4n^2 + 3n + 5)$$

16. Factor each trinomial. Check by expanding.

a) $25xy + 15x^2 - 30x^2y^2$

b) $51m^2n + 39mn^2 - 72mn = 3mn(17m + 13n - 24)$

c) $9p^4q^2 - 6p^3q^3 + 12p^2q^4$

d) $10a^3b^2 + 12a^2b^4 - 5a^2b^2$

e) $12cd^2 - 8cd - 20c^2d$

f) $7r^3s^3 + 14r^2s^2 - 21rs^2$

$$\textcircled{\text{d}}) \underline{10a^3b^2 + 12a^2b^4 - 5a^2b^2}$$

$$1a^2b^2(10a + 12b^2 - 5)$$